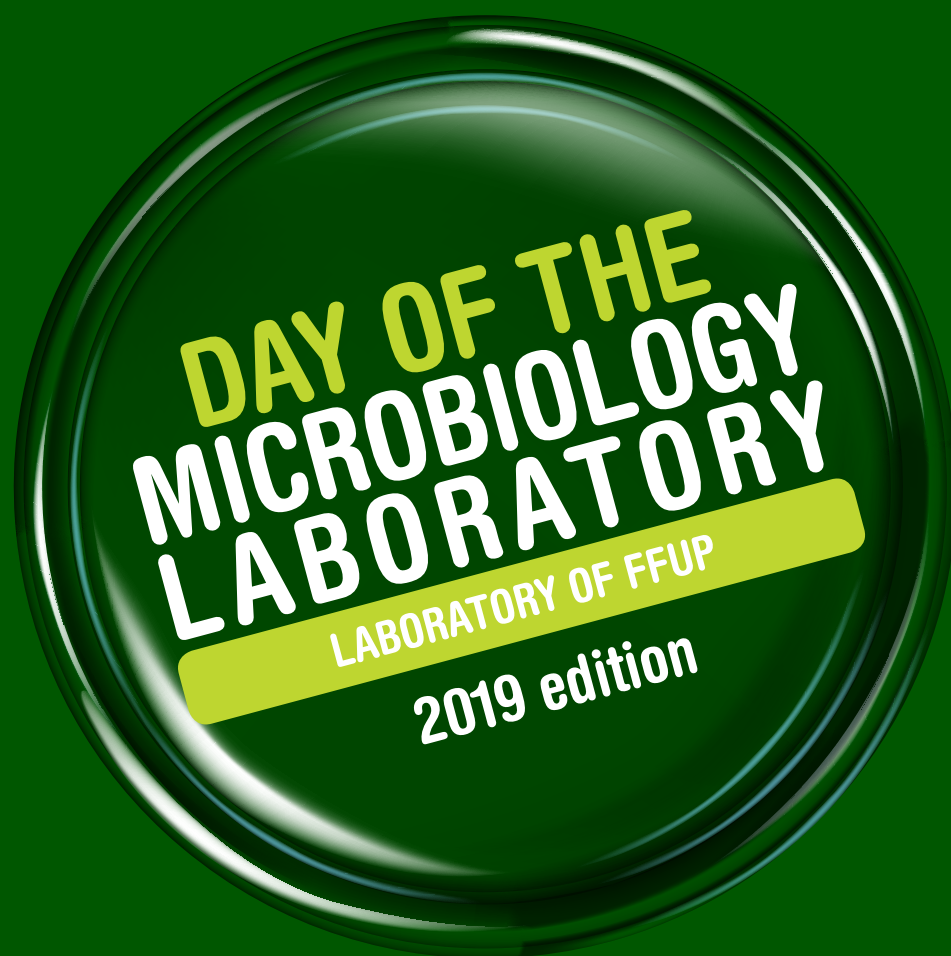


LABORATÓRIO DE MICROBIOLOGIA



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Abstract Book

P-06. ASSESS OF ACID TOLERANCE OF NON-TYPHOIDAL *SALMONELLA* AND *ENTEROCOCCUS FAECIUM* FROM DIFFERENT EPIDEMIOLOGICAL AND GENETIC BACKGROUNDS

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Acid stress is one of the most frequently encountered hostile conditions that bacteria have to face (e.g. food-production-chain/feed/disinfectants/human and animal hosts). Nevertheless, acid tolerance profile of bacteria from diverse epidemiological and genetic backgrounds, including multidrug-resistant (MDR), is still poorly explored.

The aim of this study was to assess the susceptibility to acidic-pH of non-typhoidal *Salmonella* and *Enterococcus faecium* (*Efm*) from diverse origins. We included *Salmonella* (n=66; 23 serotypes) and *Efm* (n=74; clades A1/A2/B) recovered from human-n=54, food-animal production setting-n=20, food-n=56 and environment-n=10 (1997-2018; 6-countries). The minimum-growth-pH (growth-pH_{min}) was assessed by broth-microdilution using Mueller-Hinton-II adjusted with HCl (pH=2.0-6.5/16h-20h±2h/37°C) and the minimum-survival-pH (survival-pH_{min}) by plating the microdilution wells without visible growth in Brain-Heart-Infusion-agar (BHI) (24h-48h±2h/37°C). An Acid-Tolerance-Response (ATR) assay was performed in 3 isolates of each genera (different growth/survival-pH_{min}), exposing bacteria in log-phase to an acid-shock-challenge (pH=3.0/15'-*Salmonella*/60'-*Efm*) or to a pre-adaptation to acidic-pH (pH=4.5/60' - for both bacteria) followed by an acid-shock-challenge (pH=3.0/15'-*Salmonella*/60'-*Efm*). After that a growth-pH_{min} and survival-pH_{min} assays were performed.

Most *Salmonella* showed a growth-pH_{min} of 4.0 (98%- n=65/66) and a survival-pH_{min} between 4.0 (52%- n=34/66) and 3.5 (48%-n=32/66). In *Efm*, the growth-pH_{min} ranged between 4.5 (65%-n=48/74) and 5.0 (35%-n=26/74) and the survival-pH_{min} between 3.0 (15%-n=11/74), 3.5 (43%- n=32/74) and 4.0 (42%-n=31/74). Only *Efm* isolates from food (39%-n=11/28), mostly from a poultry-processing-plant using peracetic acid as disinfectant (73%-n=8/11), presented the lowest survival-pH_{min} 3.0 (73%-MDR/82%-clade A2). Similar survival-pH_{min}=3.5-4.0 were observed for different *Salmonella* serotypes and *Efm* clades. However, a higher percentage of MDR-*Salmonella* (61%-n=27/44) were able to survive at pH=3.5 contrasting with non-MDR-*Salmonella* (23%-n=5/22) (p<0,05; Fisher-exact test). The ATR-assay (pre-adaptation acidic pH+acid shock challenge) enhanced survival-pH_{min} from 3 to 2.5 in 1-*Efm* (clade A2/MDR/from a poultry processing plant) and from 4 to 3.5 in 1-S. 4,[5],12:i:- (MDR/with *mcr-1* gene/from pork meat).

Our data suggest that MDR-*Salmonella* and *Efm* with diverse epidemiological and genetic backgrounds can survive to low-pH values, although differences among clades/serotypes were not detected. MDR-*Salmonella* showed a better ability to survive to more acidic pH than non-MDR isolates. ATR-assays revealed strain-specific ability to survive under more acidic-pH after a pre-adaptation to middle acidic-pH.